

**Government Engineering College, Dahod**  
**Civil Engineering Program**  
**Applied Mechanics Department**  
 Syllabus for Mid Semester Examination – November 2021  
**Mechanics of Solids (3130608)**

Sr. No.	Topic
1	<p><b>Introduction</b>            Definition of space, time, particle, rigid body, deformable body. Force, types of forces, Characteristics of a force, System of forces, Composition and resolution of forces. Fundamental Principles of mechanics: Principle of transmissibility, Principle of superposition, Law of gravitation, Law of parallelogram of forces, Newton’s Laws of Motion</p>
2	<p><b>Fundamentals of Statics</b>  <b>Coplanar concurrent and non-concurrent force system:</b>            Resultant, Equilibrant, Free body diagrams.  <b>Coplanar concurrent forces:</b> Resultant of coplanar concurrent force system by analytical and graphical method, Law of triangle of forces, Law of polygon of forces, Equilibrium conditions for coplanar concurrent forces, Lami’s theorem. Application of these principles.  <b>Coplanar non-concurrent forces:</b> Moments &amp; couples, Characteristics of moment and couple, Equivalent couples, Force couple system, Varignon’s theorem, Resultant of non-concurrent forces by analytical method and graphical method, Equilibrium conditions of coplanar non-concurrent force system, Application of these principles. Concept of statically determinate and indeterminate problems.  <b>Plane Truss</b> - assumptions used in the analysis of Truss. Perfect, imperfect and redundant truss, analysis of Truss by method of joints and method of sections.</p>
3	<p><b>Applications of fundamentals of statics</b>  <b>Statically determinate beams:</b>            Types of loads, Types of supports, Types of beams;            Determination of support reactions, Relationship between loading, shear force &amp; bending moment, Bending moment and shear force diagrams for beams subjected to only three types of loads :i) concentrated loads ii) uniformly distributed loads iii) couples and their combinations; Point of contraflexure, point &amp; magnitude of maximum bending moment, maximum shear force</p>

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